Claims

1. A monitoring unit comprising:

a power supply;

a sensor generating an output;

monitoring electronics connected to the sensor output including a microprocessor, firmware memory for storing a program for the microprocessor and data memory, the monitoring electronics detecting and recording changes in the sensor output as a triggering event; and

a radio transmitter for transmitting information on the triggering event supplied by the monitoring electronics, the information including an identifier for the monitoring unit.

2. The monitoring unit of claim 1 further comprising a radio receiver for receiving commands and data from a reader.

3. The monitoring unit of claim 1 further comprising means for placing the microprocessor in a sleep mode and an interrupt driven timer which periodically wakes the microprocessor out of sleep to execute monitoring activity.

4. The monitoring unit of claim 3 further comprising means for monitoring the sensor output using parameters which control thresholds used to determine whether changes in the output of the sensor constitute a triggering event and means for reading the parameters from commands received by the radio receiver.

5. The monitoring unit of claim 3 further comprising means for recording each triggering event along with a timestamp on a timeline and means for transmitting the timeline to the reader upon receiving a command.

6. The monitoring unit of claim 3 further comprising means for receiving data from the reader as a container identifier, the container identifier being associated with a container to which the monitoring unit is attached and means for transmitting the container identifier to the reader upon receiving a command.

7. The monitoring unit of claim 3 further comprising means transmitting a sensor identifier to the reader upon receiving a command, the sensor identifier specifying a type of the sensor.

8. The monitoring unit of claim 2 further comprising means for changing the identifier for the monitoring unit based on a command received from a reader.

9. The monitoring unit of claim 1 further comprising means transmitting information on each triggering event in realtime.

10. A method of monitoring cargo in a shipping container comprising the steps of:

attaching a monitoring unit to an inside surface of the shipping container, the monitoring unit including a sensor, monitoring electronics and a radio transmitter;

upon receiving a radioed start command from a reader, commencing logging data on triggering events in a memory of the monitoring unit with a time stamp, a triggering event being a change in an output of the sensor; and

upon receiving a radioed get-response command from a reader, transmitting the data on triggering events to the reader.

11. The method of monitoring cargo in a shipping container of claim 10 further comprising the steps of :

storing a cargo identifier received in a store-identifier command from the reader; and

transmitting the cargo identifier upon receiving a read-identifier command from the reader.

12. The method of monitoring cargo in a shipping container of claim 11 further comprising placing the microprocessor in a sleep mode, setting an interrupt driven timer to wake up the microprocessor after a elapsed period of time to resume monitoring operations.

14. The method of monitoring cargo in a shipping container of claim 11 further comprising periodically measuring an environmental parameter, recording a value of the environmental parameter in memory and transmitting recorded values of the environmental parameter upon receiving a command from a Reader.

15. The method of monitoring cargo in a shipping container of claim 11 further comprising the steps of transmitting a sensor identifier upon receiving a read-sensor-identifier command from the reader, the sensor identifier indicating a type of sensor.

16. The method of monitoring cargo in a shipping container of claim 11 further comprising the steps of receiving a command with sensor parameters and using the sensor parameters to determine when a triggering event has occurred by filtering the sensor output according to the parameters.

17. A method of monitoring objects passing into a point:

attaching a monitoring unit at the point to be monitored, the monitoring unit including a proximity sensor, monitoring electronics and a radio transmitter;

upon sensing a change in an output of the proximity sensor, transmitting an identifier for the monitoring unit to a reader using the radio transmitter.